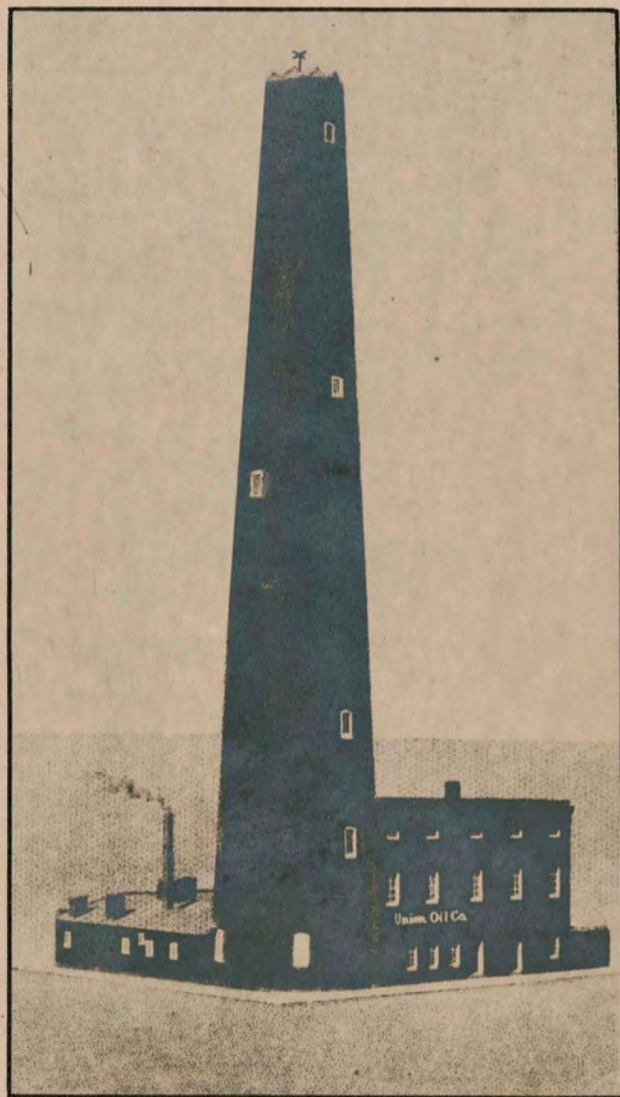


THE BALTIMORE SHOT TOWER.

Kenneth F Matthews

5/1/24



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THE SHOT TOWER

By Lizetta Woodworth Reese.

A frail coil for a cloud? For
 wind that goes
A little sadly round a house in
 spring?
Or smooth words for some old
 and lovely thing
Like panes at dusk or a red tragic
 rose?

Nor purse nor speech she asks,
 fleets Beauty by
Yester, today. Her wage is
 that we stay
Close to her side. Men go; she
 bides away
Beyond the fall of leaf, or change
 of sky.

Tall tower, still keep for us your
 ancient place
Among the trumpeting morns,
 your magic plot
Above the roofs. For Beauty's
 sake you must
Last till the town turns to un-
 chimneyed space,
When he that loves you, he
 that loves you not,
Is but a blown out name, some
 trivial dust.

THE BALTIMORE SHOT TOWER.

Towering high above the roofs of the busy city of Baltimore is a silent sentinel, which has watched over the scenes above it for nearly one hundred years, withstanding the ravages of time and defying the very elements. Many times it has been threatened with destruction, and, if it were not for its sturdy structure and commanding height, it would long ago have met the fate of a series of similar towers, and been sacrificed on the altar of progress.

Very little literature or history of shot towers can be found. Most of this material available is in the form of short reports, advertisements of old shot companies, and comparatively recent newspaper articles.

In all, there were about thirty-two shot towers in the United States, the oldest of these being Spark's Tower, erected in 1808 on Front and Carpenter Streets, Philadelphia. At one time, there were three towers manufacturing shot in Baltimore. The oldest was built in 1823 on the west side of Gay Street, north of Fayette Street. Another stood on Eutaw Street near Camden Street. There seems to be little known about this one, except that it was torn down in 1851. The third which is the only remaining one in the Monumental City is located on the southeast corner of Front and Fayette Streets. At the time of its construction Fayette Street was known as Pitts Street. This was the site of the first Baptist Meeting House in Baltimore, the land being purchased for this purpose as early as 1773.

HISTORY

It was on the second of June, 1828, that Charles Carroll of Carrollton, the last surviving signer of the Declaration of Independence, laid the corner stone for this tower, which was to be one of the largest and highest of the kind ever constructed. It was built for the Pheonix Shot Company by Jacob Wolfe, a well known builder, who had achieved prominence as the builder of the Gay Street tower, and to him is due the credit for this remarkable example of masonry. The tower was completed November 25, 1828.

In 1844, Baltimore was in the midst of a political battle between two opposing parties, those backing Henry Clay and those supporting James K. Polk for the presidency. During this political struggle, a burgee bearing the names Polk, Dallas and Carroll was flown from the top of the tower. Patrons of the firm, who were friends of Henry Clay, filed protests against the use of the tower for political purposes. John McCullough, a New Yorker, who was president of the Pheonix Company, gave this protest no attention. Following this action, the merchants supporting Clay for president and Pratt for governor wasted no time in organizing a new company known as the Merchants Shot Company. This group built a tower on Eutaw Street, and almost from the beginning took trade from the Pheonix Company.

McCullough's party won the election, but he lost the trade of his patrons, who were in no humor to forget that

offensive burgee, and in 1847 he was glad to sell out to the new company and leave Baltimore.

The Merchants Shot Company was progressive in every way. The following is from the company's advertisement for the year 1873:

"Having all the new and most improved machinery for the manufacture of Drop and Mould Shot and Bar Lead, the quality of our manufactured articles, in size, style and finish is not excelled in the world.

Mould Shot. Nos. 16, 37, 55, IC, AP, NP,
OOO, OO, O

Drop Shot. TTT, TT, BBB, BB, B, 1, 2, 3,
4, 5, 6, 7, 8, 9, 10, 11, 12,
13, 14."

In 1878, the interior was destroyed by fire. The flames shooting from the top of the tower furnished one of the most spectacular sights ever witnessed in Baltimore.

The interior was rebuilt and the company continued a flourishing business, until the American Shot & Lead Company became a bitter rival, finally owning twenty-eight of the thirty-two towers in the United States. The Baltimore firm living up to the splendid traditions of its founders waged a fight as long as it was wise. However, it finally came under the control the United Lead Company, a group of financiers of national reputation. Later some of their towers were torn down and worked ceased at others. No shot was manufactured in the Baltimore tower after 1892, and it was seemingly overlooked.

RECENT HISTORY.

It was from the United Lead Company, that the present owners, the Union Oil Company, purchased the property in 1921 for the small sum of \$14,500.

The contract specified that the tower should not be used for making shot. The object of this was plainly the elimination of competition.

The ground floor is now used as storage room for the Union Oil Company. The remaining part of the tower is of no value to the firm, except as an advertisement for their place of business.

This brings its history down to the present controversy. The question is whether the shot tower will be torn down to make room for a more useful structure, or preserved as a monument. The owners are in a rather peculiar position. They do not wish to destroy a historic land mark, but yet they are not so flushed with capital that they can become philanthropists and donate to the public a property which is a source of income to them.

The fact that the people of Baltimore desire the preservation of the tower was manifest in the many editorials in the newspapers when it was learned that the tower was to be taken down.

Criticising the actions of others is groundless without a remedy for the ills. Therefore, this enthusiasm and desire must be backed up by something tangible. It is

hoped that in the near future, the public spirit will be so fired that contributions will be raised and the tower purchased from the owners, and that it will remain the guardian of ground once devoted to religious purposes.

DESCRIPTION OF TOWER.

The brick foundation of the tower is 10 feet wide at the base and 6 feet at the top, and rests on rock 17 feet below grade. It might be well to mention here that the street level has been raised since the tower was first constructed. This fact accounts for the difference in height and width of wall at base, as given by various records.

The circular wall has an incline of about $1\frac{1}{2}$ inch to the foot. The outside diameter of wall at base is 40 feet, 6 inches, and at the top 20 feet. It starts at the grade with a base of several projecting courses. At the street surface it is $4\frac{1}{2}$ feet thick, which thickness continues for nearly 50 feet, when it diminishes at each story until it reaches the top with a thickness of 21 inches.

The whole is crowned with an eighteen inch parapet wall making the summit of the tower 234 feet above the ground.

The tower is as solid as rock. In the heaviest gale the maximum vibration did not exceed four inches.

The bricks measure $8\frac{1}{8}$ inches x $2\frac{1}{6}$ inches x 4 inches. They were hand made, wood burned, and brick of uniform size and color; laid for courses to ten and one-half

inches, one course of headers to every three of stretchers. The firm of Burns & Russel, which manufactured the bricks, was established in 1818 and is still in business.

INTERIOR CONSTRUCTION

Light is furnished to the interior by eleven windows. Gas was the artificial means of lighting. Entrance to the ground floor may be made by three doors, -one opening on the street and the other two opening in the adjoining buildings. On entering, one is struck with the simpleness of construction. Four wooden columns extend almost the entire length of the tower. Their sizes vary from 11 x 12 inches at the bottom, to 9-1/2 x 9-1/2 inches, where they terminate below the iron floor near the top. Each floor and landing is supported by two main horizontal beams which vary in size from 9-1/2 x 11-1/2 inches to 5-1/2 x 11-1/2 inches. They are built into the wall of the tower and bolted to the upright columns with 5/8 inch bolts having 1 inch square heads. This is the type of construction used throughout the tower, with a very few exceptions.

In the center of the tower are two wooden columns about 8 x 8 inches, which extend to the top. To these are bolted the iron guides for the elevator which carried the lead to the furnaces in the upper floors. The guide is of interest because of a worm groove in the center. A roller with ends fitting in the grooves extends from one guide to the other. Mounted on the roller are two gears which move in racks fas-

tened to the bottom of the elevator. This mechanism retards the downward motion. The wooden supports of the elevator shafts are steadied by iron braces which are bolted to them and to the horizontal beams. There is sufficient room on each side of the elevator for shot to drop from the top to tanks at the bottom. On the Fayette Street side of the tower, fastened to the joists of the second floor are two iron drums, one the main elevator drum and the other nothing more than a pulley for a belt drive. The shaft of the two drums are connected with a train of gears.

An iron stairway which is ^a beautiful example of casting follows the circular wall to the second floor. On this floor are the tops of two large boot-heel tanks on either side of the elevator shaft. These tanks and other equipment will be described in more detail under method of making shot.

A continuous chain with buckets attached runs from the greatest depth of the tanks to a point between the third and four floors, where a series of inclines begin, which terminate on the second floor near a door, which leads to the second floor of the adjoining building.

There are a series of wooden stairs and landings from the second floor to within 50 feet of the top. Here there is an iron floor one-half inch thick, supported by two main horizontal "I" beams, 15 x 5-3/4 inches, which are built into the wall. These two beams carry "I" beams 8 x 4-1/4 inches, spaced 20 inches apart, which hold the iron floor. On the side opposite the Fayette Street side there is a large circu-

lar furnace 5 feet high with a 6 foot diameter. The furnace is connected with a brick stack, which goes to the top. All of the wood work around the furnace is covered with sheet iron.

This floor is connected with the one above with a spiral stairway incased in an iron cylinder 5 feet in diameter. This last floor is within 20 feet of the top. Another smaller furnace 5 feet high with a 4-foot diameter is in a position just above the first one mentioned. On both of these floors are several dropping pans.

Between the last floor and the roof are mounted two 3-foot diameter pulleys which bring the elevator cable from a point over the drum to the center of the shaft.

The timber used in the interior frame work is the best grade of yellow pine.

A trap door leads to the roof which is covered with copper. Here again is evidence that nothing but the best material was used in the construction of the tower, which accounts for the fact that it is as strong and safe as it was when first built.

This height furnishes a wonderful panoramic view of the city, and as one's eyes wander over the view, all thoughts of the long climb to the top are forgotten.

METHOD OF MAKING SHOT.

Lead was hoisted by the elevator to the two floors on which were located the iron furnaces. Here the lead was melted and alloyed principally with arsenic.

A perforated basin or dropping pan about 12-1/2 inches in diameter and 3 inches deep was suspended over the hatchway by a holder attached to one of the columns. The small perforations in the bottom of this pan were stuffed with wire gauze. The molten lead was dipped out of the melting furnace with long handled ladles and poured into a compartment in the center of the pan which allowed only a thin layer of lead to cover the other part. This was the method used to prevent lead from running through the perforations in a stream, the size of the shot being determined by the size of the perforations.

The drops of molten lead formed into spherical globules, which were cooled in passing through the air and finally fell into the tank of water at the bottom. The largest shot were dropped from the greatest elevation, so that they would have more time for cooling.

Fastened to a continuous chain the iron buckets, with perforations in them to allow the water to flow out, scooped up the shot and carried them to the top of a series of inclines. The bottoms of these inclines were heated with exhaust steam from the engine, which was located in the build-

ing fronting on Fayette Street.

The shot, not yet free from all moisture, were collected at the bottom of the incline and dumped into a revolving drum around which circulated steam in a hollow steam jacket. When they were poured out, the shot were thoroughly dry and ready to be polished.

Again they were put in a revolving cask where black lead was added. The swift rotary motion caused the shot to rub against one another and a high polish was quickly produced.

The polished shot were next taken into the finishing room adjoining the tower where it was rolled down an incline made up of five plates of French plate glass. This was done to separate the perfect from the imperfect shot, the former running freely down, while the latter slid, and instead of jumping the spaces in the plates, fell in between, where they were collected and taken back for re-melting.

The angle of the plates could be changed, so only sizes of shot between certain limits would reach the bottom.

The perfect shot were next put through sieves of different sizes. The sieves first used in the early days of its history were in the form of a mahogany chest of drawers, the bottoms of which were made of sheep skin drawn tight and perforated. The larger perforations were in the top drawers. The shot were put in the top and the whole chest set in an iron cradle which rocked back and forth. The small shot finally worked toward the bottom through the various sizes of holes.

The method later used was a rack of revolving cylinders with different sized perforations in them. The smallest was at the top. One end of the cylinders was smaller than the other, so that the shot which did not go through the holes passed on to the next cylinder. The shot passing through the holes in the various cylinders were collected in boxes below the rack.

After the sizing process it was again run down an incline, which was made up of a series of mahogany plates. If the shot were not perfectly round, the small pores or natural roughness of the wood surface would retard its progress and it would fall between the plates instead of jumping over. This final step in the process gave a very excellent grade.

The perfect shot were then put in bags, which were weighed and sewed, ready for shipment.

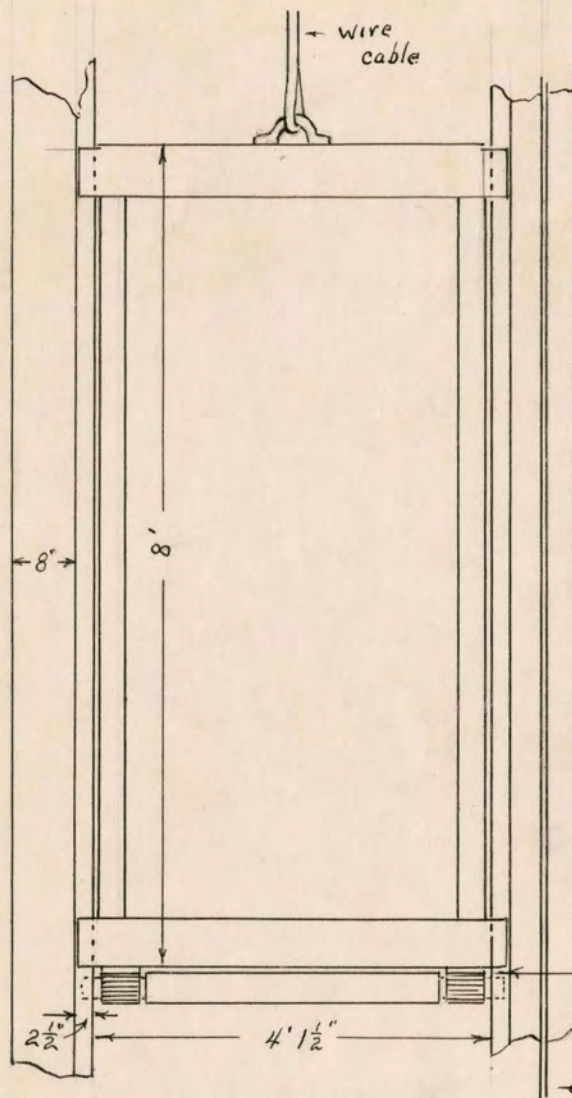
The yearly capacity of the tower was nearly 500,000 twenty-five pounds bags.

Kenneth F. Matthews.

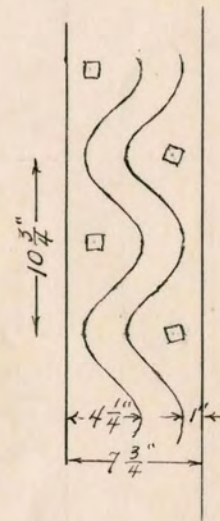
May 1, 1924.

PLATE 1.

Elevator for hoisting
lead



Section of
guide



gear and
rack

wire cable for
starting and stopping
elevator; shifting belt from
idler to revolving pulley.

View of bottom of elevator.

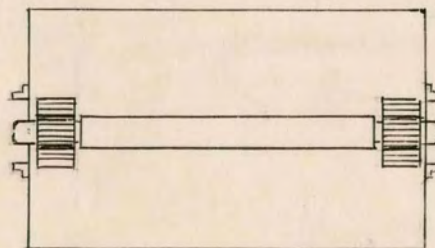
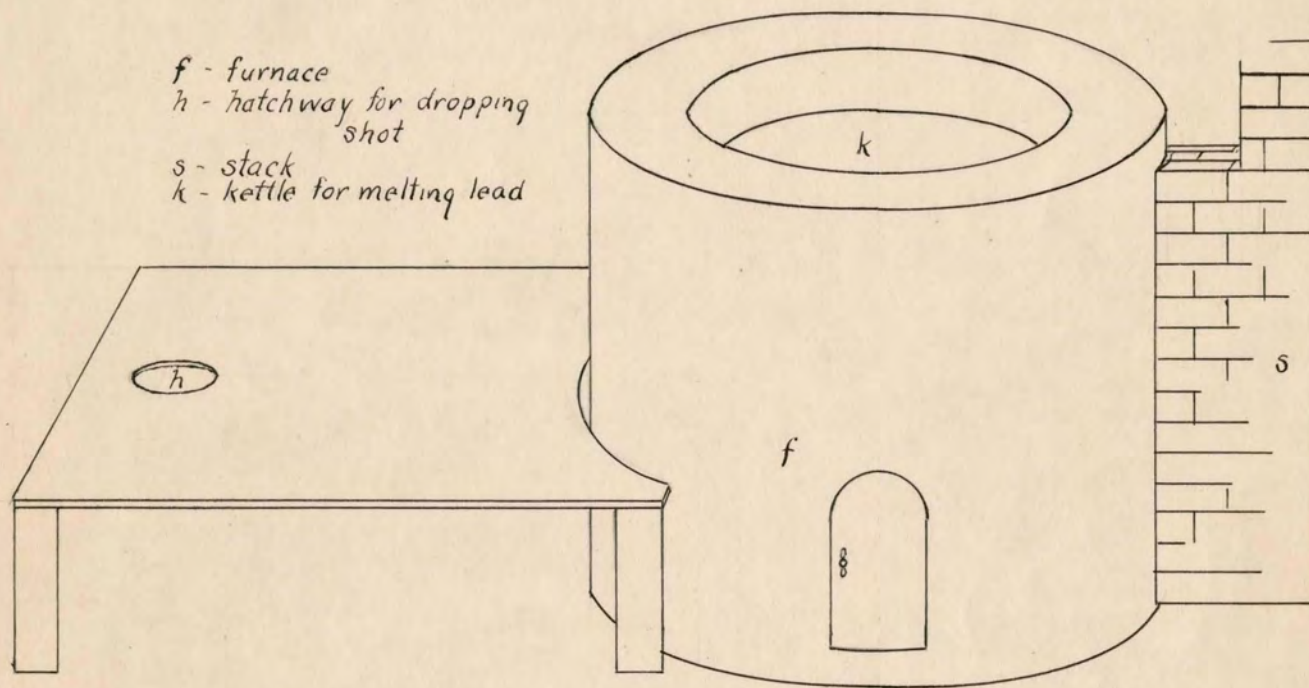


PLATE 2.

I. Furnace for Melting Shot.



II. Dropping Pan

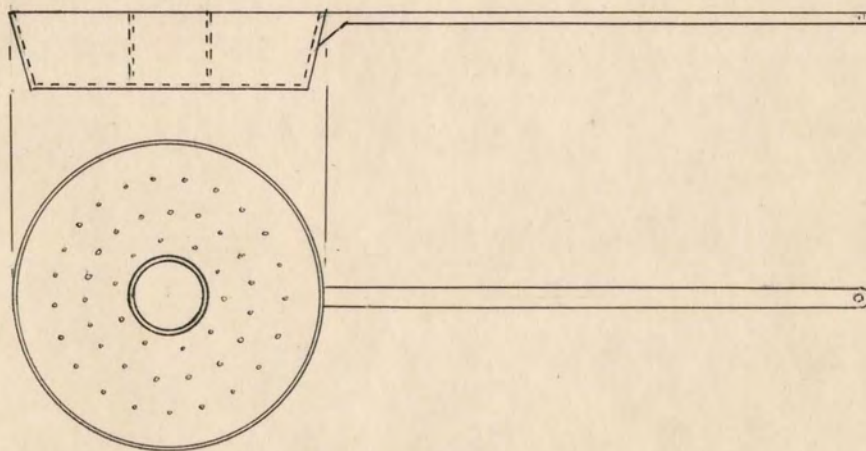


PLATE 3.

Boot-Heel Tank and Continuous Bucket Chain

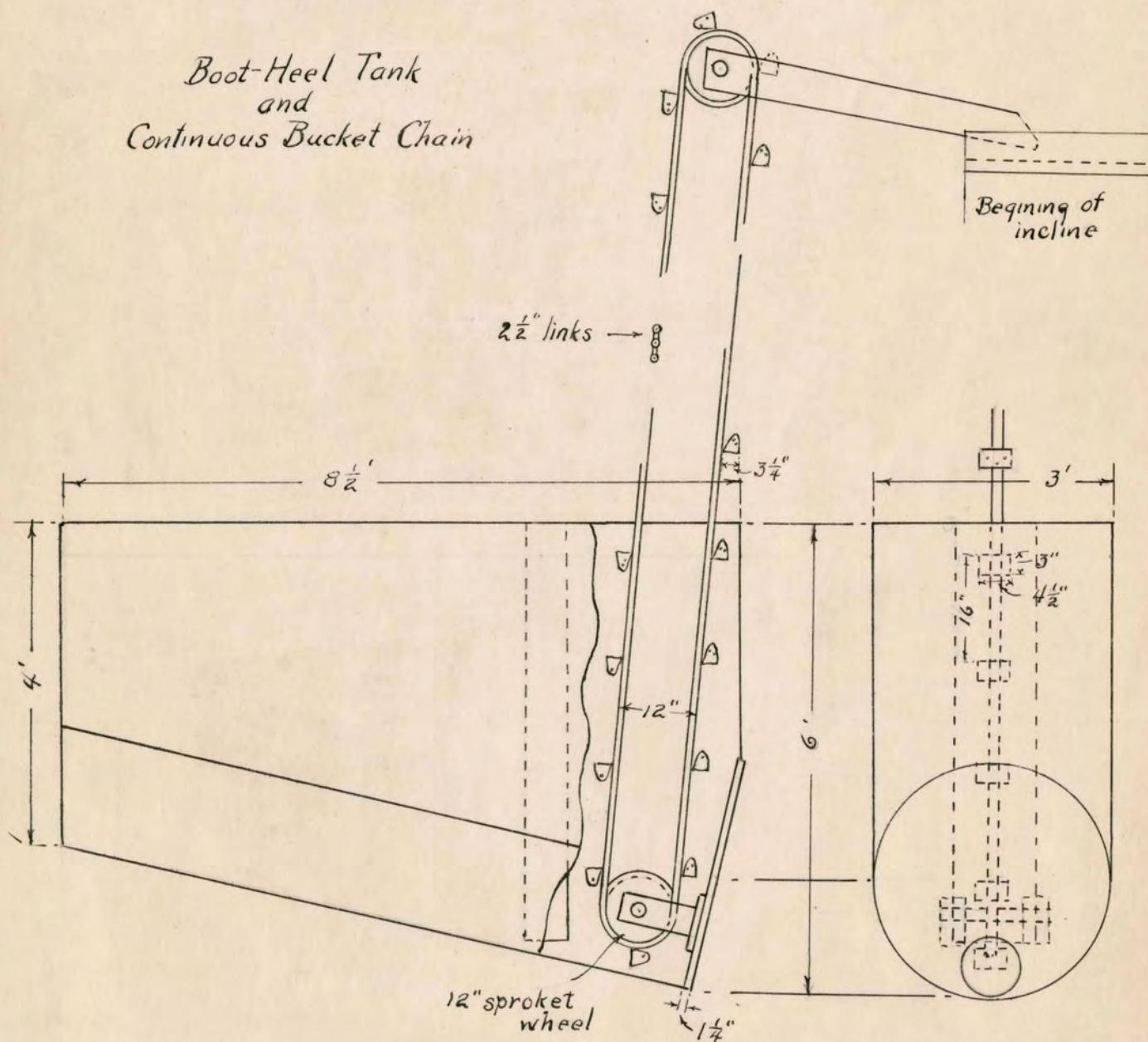
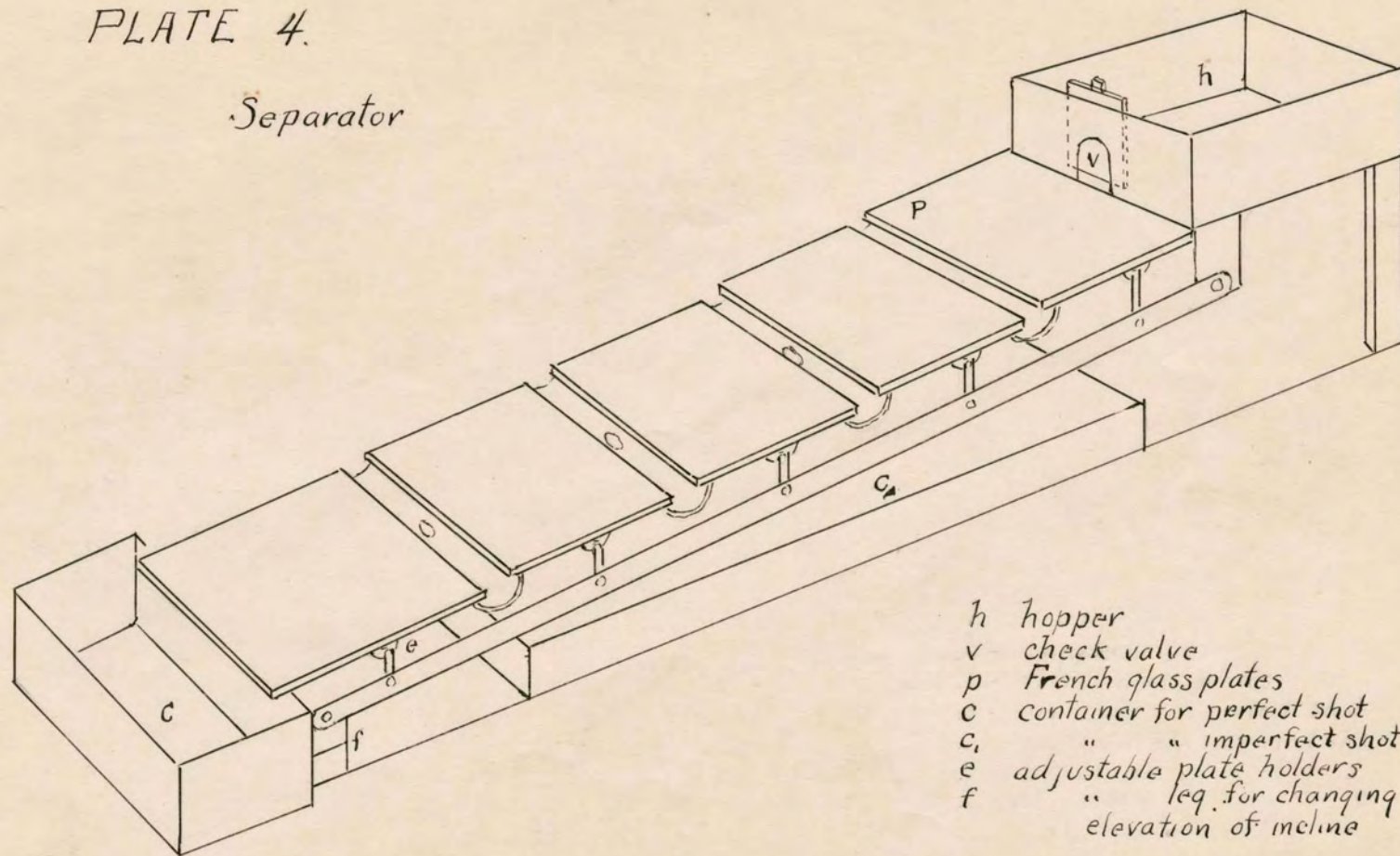


PLATE 4.

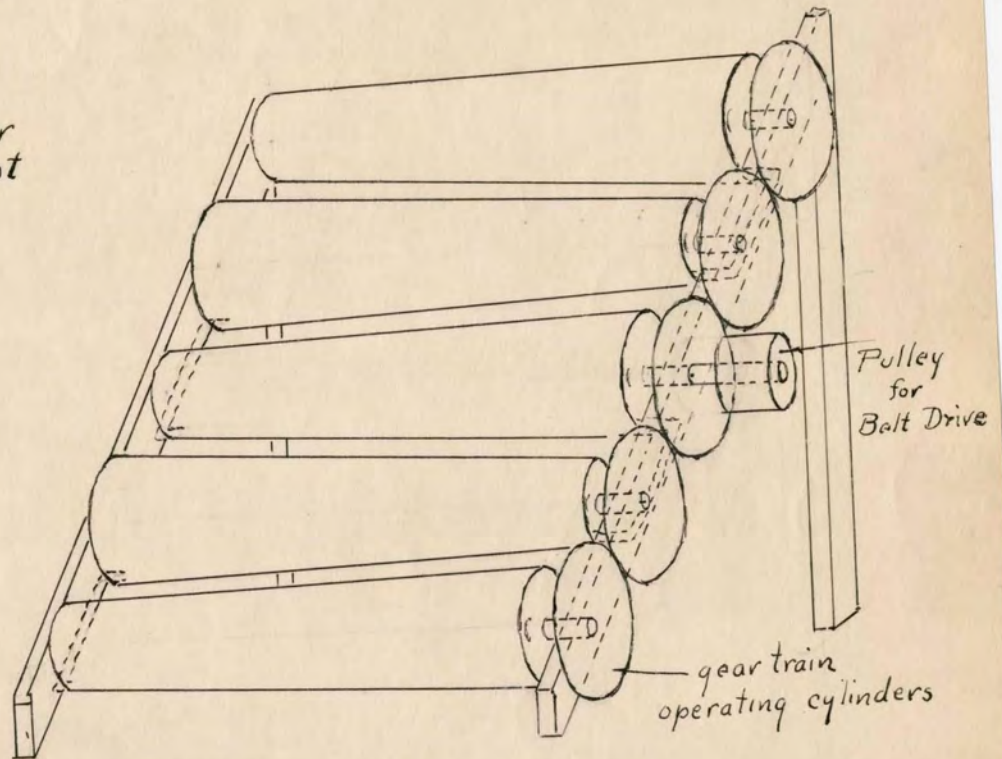
Separator



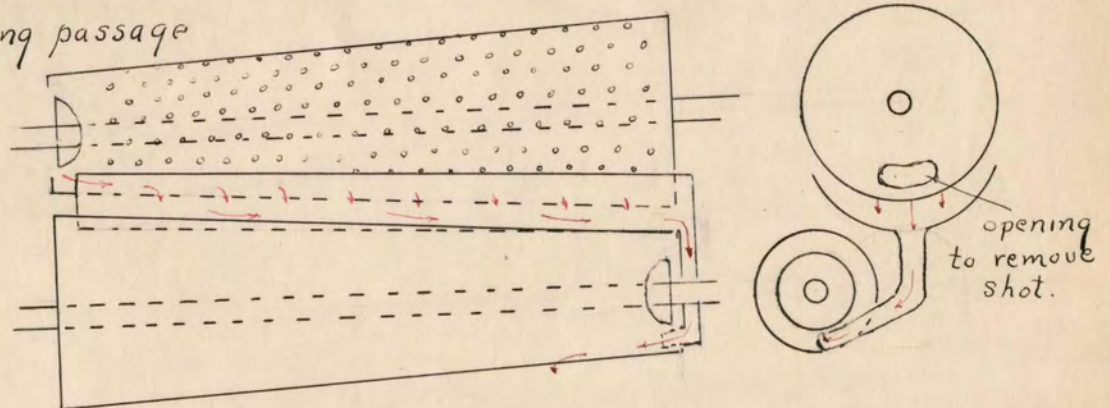
- h hopper
- v check valve
- p French glass plates
- C container for perfect shot
- C_i " " imperfect shot.
- e adjustable plate holders
- f " leg. for changing elevation of incline

PLATE 5.

Cylinders for
sizing shot



Detail showing passage
of shot



BIBLIOGRAPHY

All statements made in this paper relating to the history of the tower and its size may be corroborated with the following records.

Nile's Register, December 27, 1828.

This was a weekly publication edited by Hezekial Nile (1777-1839). It contained political, historical, geographical, scientific, statistical, economical and biographical documents together with a record of the events of the times.

Journal of American Institute of Architects, May, 1921.

"The Monumental City", edited 1858 by John Gobright, city reported.

"The Monumental City", edited 1873 by Howard.

Gives an account of the past and present resources of Baltimore.

Clippings from Baltimore newspapers of 1921.

There are no written records available of the machinery used in the plant adjoining the tower. All such records were destroyed in the Baltimore fire of 1905. None of the original machinery is intact. Machinery mentioned in the paper was described by Mr. Fickenscher and his son (who are the present owners of the tower), Mr. Harvey of the Mercantile Trust & Deposit Company, and Mr. G. W. Sharrett, superintendent of the James Robinson Lead Works.

Mr. Harvey, and his father before him, were presidents of the Merchant Shot Company.